

Awareness of Racial Disparities in Kidney Transplantation among Health Care Providers in Dialysis Facilities

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Abstract

Background and objectives Despite the important role that health care providers at dialysis facilities have in reducing racial disparities in access to kidney transplantation in the United States, little is known about provider awareness of these disparities. We aimed to evaluate health care providers' awareness of racial disparities in kidney transplant waitlisting and identify factors associated with awareness.

Design, setting, participants, & measurements We conducted a cross-sectional analysis of a survey of providers from low-waitlisting dialysis facilities ($n=655$) across all 18 ESRD networks administered in 2016 in the United States merged with 2014 US Renal Data System and 2014 US Census data. Awareness of national racial disparity in waitlisting was defined as responding "yes" to the question: "Nationally, do you think that African Americans currently have lower waitlisting rates than white patients on average?" The secondary outcome was providers' perceptions of racial difference in waitlisting at their own facilities.

Results Among 655 providers surveyed, 19% were aware of the national racial disparity in waitlisting: 50% (57 of 113) of medical directors, 11% (35 of 327) of nurse managers, and 16% (35 of 215) of other providers. In analyses adjusted for provider and facility characteristics, nurse managers (versus medical directors; odds ratio, 7.33; 95% confidence interval, 3.35 to 16.0) and white providers (versus black providers; odds ratio, 2.64; 95% confidence interval, 1.39 to 5.02) were more likely to be unaware of a national racial disparity in waitlisting. Facilities in the South (versus the Northeast; odds ratio, 3.05; 95% confidence interval, 1.04 to 8.94) and facilities with a low percentage of blacks (versus a high percentage of blacks; odds ratio, 1.86; 95% confidence interval, 1.02 to 3.39) were more likely to be unaware. One quarter of facilities had >5% racial difference in waitlisting within their own facilities, but only 5% were aware of the disparity.

Conclusions Among a limited sample of dialysis facilities with low waitlisting, provider awareness of racial disparities in kidney transplant waitlisting was low, particularly among staff who may have more routine contact with patients.

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Introduction

In 2014, almost 700,000 patients in the United States had ESKD (1). Although kidney transplantation is the preferred therapy, offering improved survival, better quality of life, and health care cost-savings compared with dialysis (2–4), the benefits of transplant are not equitably distributed in the United States. Racial disparities in access to transplant have been well documented, with racial differences existing in all steps to transplant, including referral for transplant evaluation (5), placement on the deceased donor waiting list (6,7), and receipt of transplant (8,9). These racial differences persist even after adjusting for socioeconomic factors, health status, comorbidities, and patient preferences (10). Recent studies continue to show that blacks have a nearly 25% lower likelihood of being placed on the kidney transplant waitlist

compared with whites (7). To address some of these disparities in access to transplant, the United Network for Organ Sharing implemented a new kidney allocation system in December 2014 (11); a major change of the policy is that now patients accrue waiting time at the start of ESKD rather than at the time of waitlisting. Because blacks spend longer times on dialysis on average before being referred for transplantation (12), the new policy has increased transplant access to historically disadvantaged patients (13,14).

Nearly 90% of all patients with ESKD in the United States are initiated on dialysis (15). Thus, health care providers at dialysis facilities, including nephrologists, nurses, and social workers, can play a key role in educating patients about transplantation, referring patients for transplant evaluation, and helping to navigate the multistep process leading up to transplantation.

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However, a wide variation exists in the number of patients who are waitlisted across United States dialysis facilities, and more than one quarter of dialysis facilities have a significant racial disparity in the proportion of black versus white patients with ESKD who are waitlisted for transplant (16). Furthermore, previous research has shown that racial differences exist in the quality of communication about transplant as a therapy option (17,18). For example, black patients are less likely than whites to report receiving information about transplantation (17), and black (versus white) patients are more likely to be reported as unsuitable for transplantation, because they are “psychologically unfit” (18).

Despite the important role that health care providers at dialysis facilities can play in addressing disparities in access to transplantation, little is known regarding their awareness of racial disparities in the transplant process, including waitlisting. No studies to our knowledge have examined dialysis health care providers’ awareness of racial disparities in kidney transplantation at a national level. To address this gap in the literature, we conducted a cross-sectional analysis of a baseline survey of health care providers from United States dialysis facilities with low rates of waitlisting for transplantation to evaluate dialysis health care providers’ awareness of racial disparities and identify factors associated with low awareness.

Materials and Methods

Study Design and Data Sources

This study was a secondary cross-sectional analysis of a baseline survey conducted as a part of the randomized effectiveness implementation Allocation System Changes for Equity in Kidney Transplantation (ASCENT) Study (19) that targeted health care providers (medical directors, facility administrators, social workers, and others dialysis facility staff involved in transplant education) from participating dialysis facilities. Dialysis facilities were selected if they were in the lowest national tertile for waitlisting in 2014 (<15.2% of patients waitlisted in the facility). Dialysis facilities with <11 total patients and fewer than four black patients were excluded from the original study (Figure 1). Although the study did not aim to target a specific region, a greater proportion of facilities from the South qualified for our study; among all eligible dialysis facilities with low waitlisting, 57% were from the South. All 1529 eligible dialysis facilities received an email link to a 41-item online survey from their respective ESRD networks in September 2016. If multiple providers from the same facility completed the survey, we included only one respondent per facility for analyses, prioritizing *via* provider role: (1) medical director, (2) nurse manager, (3) facility administrator, (4) social worker, and (5) other staff. The survey consisted of questions assessing providers’ knowledge of kidney transplant and the new kidney allocation system, staff training and patient education activities, and transplant referral practices. To minimize selection bias due to missing data, we standardized reminders to complete the survey for all facilities; to minimize potential misclassification due to social desirability bias, we communicated to all eligible facilities that their responses would be kept anonymous except to the researchers. Also, a multivariable logistic regression was used to adjust for confounding.

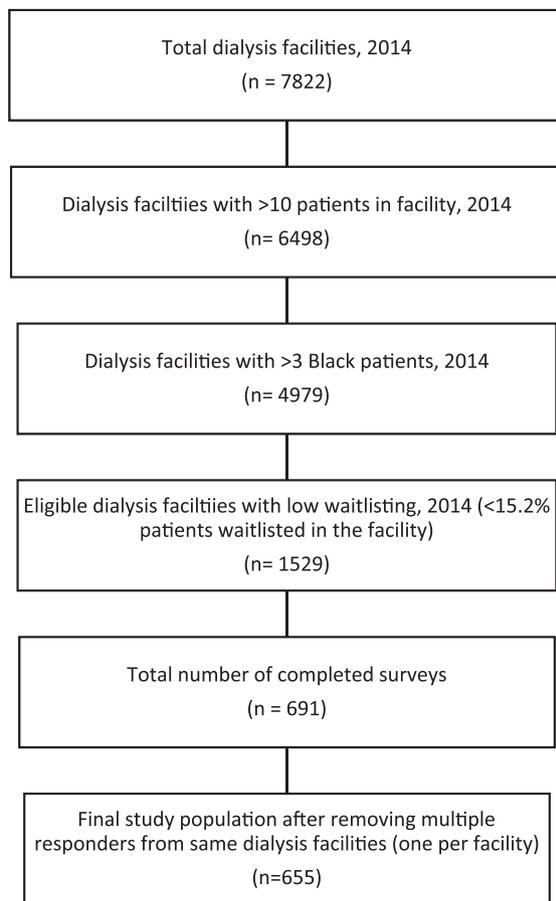


Figure 1. | Facility selection for participation in the 2016 ASCENT baseline survey representing all 18 ESRD networks in the United States resulted in a total of 655 participating dialysis facilities with low rates of waitlisting.

Further details of the study methods have previously been described (19). The Emory University Institutional Review Board approved the study (IRB#81580; trial registration: ClinicalTrials.gov no. NCT02879812).

All survey data were linked *via* facility provider number to 2014 US Renal Data System (USRDS) surveillance data (which was used for the ASCENT Study facility selection). The USRDS data include nearly all treated patients with ESKD in the nation *via* the Medicare ESKD program; the USRDS patient data were summarized to obtain facility-level characteristics. The ASCENT Study survey data were also linked to 2014 American Community Survey (ACS) data by facility zip code to obtain additional facility neighborhood characteristics for each participating dialysis facility. A sensitivity analysis was conducted to compare facility characteristics of responders with those of nonresponders.

Study Variables

The primary outcome was awareness of the national racial disparity in kidney waitlisting assessed by one of the ASCENT Study baseline survey questions: “Nationally, do you think that African Americans currently have lower waitlisting rates than white patients on average?” Answers for this question were dichotomized as “yes” versus “no” or “unsure.”

Table 1. Characteristics of 655 unique dialysis facilities across all 18 ESRD networks stratified by awareness of the national racial disparity in kidney transplant waitlisting in 2016

Characteristics	Study Population, n=655 ^a	Aware of Racial Disparities in Waitlisting, n=127 (19%)	Unaware of Racial Disparities in Waitlisting, n=528 (81%)
Responding provider characteristics, n (%)			
Sex ^b			
Women	481 (73)	69 (54)	412 (78)
Men	141 (22)	56 (44)	85 (16)
Prefer not to answer	33 (5)	2 (2)	31 (6)
Role at facility ^b			
Medical director	113 (17)	57 (45)	56 (11)
Nurse manager	327 (50)	35 (28)	292 (55)
Facility administrator	113 (17)	14 (11)	99 (19)
Social worker	85 (13)	17 (13)	68 (13)
Other staff	17 (3)	4 (3)	13 (3)
Race/ethnicity ^c			
White (non-Hispanic)	398 (61)	67 (53)	331 (63)
Black	83 (13)	24 (19)	59 (11)
Hispanic	40 (6)	6 (5)	34 (6)
Other ^d	72 (11)	22 (17)	50 (10)
Prefer not to answer	62 (10)	8 (6)	54 (10)
Age, yr ^c			
21–39	167 (26)	24 (19)	143 (27)
40–49	208 (32)	44 (35)	164 (31)
50–59	157 (24)	29 (23)	57 (24)
60 or older	84 (13)	27 (22)	57 (11)
Prefer not to answer	39 (6)	3 (2)	36 (7)
Transplant and racial disparities knowledge ^b			
On average, white patients are on dialysis for a longer time than black patients—incorrect ^e	361 (55)	40 (32)	321 (61)
Facility characteristics			
No. of patients, n (%) ^{c,f}			
≤50	200 (31)	32 (25)	168 (32)
51–70	157 (24)	31 (24)	126 (24)
71–95	135 (21)	27 (21)	108 (21)
>95	161 (25)	35 (28)	126 (24)
No. of staff, n (%) ^g			
≤10	184 (28)	36 (28)	148 (28)
11–15	212 (32)	37 (29)	175 (33)
16–20	128 (20)	25 (20)	103 (20)
>20	122 (19)	25 (20)	97 (18)
High percentage of blacks (≥23%), n (%) ^c			
Yes	445 (68)	96 (76)	349 (66)
No	210 (32)	31 (24)	179 (34)
Facility with racial disparity in waitlisting in 2014 (black versus white), n (%) ^f			
Profit (versus nonprofit)	289 (44)	58 (46)	231 (44)
Percentage of families below national poverty level (by zip code of facility), n (%)			
0–10 (least poor)	182 (28)	29 (23)	153 (29)
10–15	159 (24)	26 (21)	133 (25)
15–20	139 (21)	35 (28)	104 (20)
≥20 (most poor)	175 (27)	36 (28)	139 (26)
Insurance types, %, mean (SD)			
Medicaid only	28 (13)	28 (13)	28 (13)
Medicare	39 (13)	38 (13)	39 (13)
Employer based	19 (10)	19 (10)	19 (10)
Other insurance	6 (6)	6 (4)	6 (6)
Uninsured	10 (7)	10 (7)	9 (7)
Comorbidities, mean (SD)			
Average count of comorbidities	2 (0.5)	2 (0.5)	2 (0.5)
Diabetes, %	56 (10)	54 (9)	56 (10)
Hypertension, %	88 (7)	88 (7)	88 (7)
Congestive heart failure, %	30 (12)	13 (8)	30 (11)
Chronic obstructive pulmonary disease, %	10 (6)	11 (7)	10 (6)
Cancer, %	7 (4)	7 (5)	7 (4)

Table 1. (Continued)

Characteristics	Study Population, <i>n</i> =655 ^a	Aware of Racial Disparities in Waitlisting, <i>n</i> =127 (19%)	Unaware of Racial Disparities in Waitlisting, <i>n</i> =528 (81%)
US Census regions, <i>n</i> (%) ^c			
South	454 (69)	82 (65)	372 (71)
Northeast	27 (4)	11 (9)	16 (3)
Midwest	120 (18)	25 (20)	95 (18)
West	54 (8)	9 (7)	45 (9)

^aNo missing values unless specified.
^b*P* value <0.001.
^c*P* value <0.05.
^dOther includes those who self-identified as “Asian,” “American Indian or Alaskan Native,” “Native Hawaiian or other Pacific Islander,” and “Multiple Races.”
^eProviders who did not respond “false” to the statement “On average, white patients are on dialysis for a longer time than African-American patients.”
^fMissing variable in two observations.
^gMissing variable in nine observations.

A secondary outcome was provider awareness of facility-level racial differences in transplant waitlisting among the facilities that had a higher proportion of white patients on the transplant waitlist compared with black patients in 2014 (percentage of whites waitlisted – percentage of blacks waitlisted >5%). A facility was considered to have a racial difference if this difference was >5%. Awareness of facility-level racial difference in waitlisting was assessed with the ASCENT Study survey question “At your facility, do you think there are existing racial differences in waitlisting?” Answers to this question were also dichotomized as “yes” versus “no” or “unsure.”

Covariates from the ASCENT Study, the USRDS, and the ACS data were analyzed. Responder characteristics included sex, race, age, role at the facility, and one knowledge item regarding racial disparities in transplant. The knowledge item assessed whether the provider knew that black patients spend a longer time on dialysis than white patients on average. The question was as follows: “On average, white patients are on dialysis for a longer time than African-American patients.” The question was categorized as correct (if answered “false”) or incorrect (if answered “true”).

Facility characteristics examined included self-reported patient and staff numbers at the facility in the ASCENT Study survey, which were categorized into ≤50, 51–70, 71–95, and >95 for the number of patients and ≤10, 11–15, 16–20, and >20 for the number of staff at the facility; poverty level for the zip code where the facility was located from the ACS data (categorized into 0%–10%, 10%–15%, 15%–20%, and ≥20% of households in the Zip Code Tabulation Area below the national poverty level); percentage of black patients at the facility from the USRDS (categorized into “high percentage of blacks” or “low percentage of blacks” using the national median of 23% as the cut point); facility-level racial disparity in transplant waitlisting between whites and blacks in 2014; profit status (for profit versus nonprofit); composition of patient insurance types (percentage of patients with Medicaid, patients with Medicare, patients with employer-based insurance, patients with other insurance, and patients who are uninsured); distribution of patient comorbid conditions at dialysis start (average count of patients’ comorbidities and

percentages of patients with diabetes, hypertension, congestive heart failure, chronic obstructive pulmonary disease, and cancer); and US Census geographic region (West, Midwest, South, and Northeast).

Data Analyses

Descriptive statistics were used to determine the percentage of staff who were aware of the national racial disparity in waitlisting. We used Pearson chi-squared tests for categorical variables and *t* tests for continuous variables to determine which provider- and facility-level characteristics were associated with awareness of this racial disparity in univariable analyses. Multivariable logistic regression was used to create an adjusted model of factors related to lack of provider awareness of the national racial disparity in transplant waitlisting. The multivariable modeling strategy first included all variables potentially associated with awareness. Then, nonautomated backward elimination was performed, removing variables one at a time on the basis of changes on the effect estimates of covariates, except age and sex variables, which were retained *a priori*. There were missing data in some fields of the survey (*e.g.*, age, race/ethnicity, and sex), because some participants answered “prefer not to answer.” Analyses showed that participants who selected this answer choice were more likely to be unaware of racial differences in waitlisting; as a result, the category “prefer not to answer” was included in the multivariable models, because excluding this category would likely result in a selection bias. All analyses were performed using SAS 9.4. Statistical significance was set at *P* value <0.05, and 95% confidence intervals (95% CIs) were used as the threshold.

Results

Characteristics of Dialysis Providers and Facilities

Among the 1529 facilities with low waitlisting that were eligible and invited to participate, 691 providers from 655 distinct facilities across all 18 ESRD networks in the nation completed the baseline survey (an approximately 43% response rate). After one provider per facility was selected

Table 2. Characteristics associated with lacking awareness (versus being aware) of racial differences in national kidney transplant waitlisting among providers from 655 dialysis facilities with low waitlisting across all 18 ESKD networks in 2016

Characteristics	Crude OR, Unaware versus Aware (95% CI)	Adjusted OR, ^a Unaware versus Aware (95% CI)
Responder characteristics		
Sex		
Men	Reference	
Women	3.93 (2.58 to 6.00)	1.55 (0.79 to 3.04)
Prefer not to answer	10.2 (2.35 to 44.4)	5.06 (0.26 to 97.4)
Role at facility		
Medical director	Reference	
Nurse manager	8.49 (5.11 to 14.1)	7.33 (3.35 to 16.0)
Facility administrator	7.20 (3.68 to 14.1)	6.05 (2.42 to 15.1)
Social worker	4.07 (2.13 to 7.78)	3.04 (1.22 to 7.57)
Other staff	3.31 (1.02 to 10.8)	3.08 (0.72 to 13.2)
Race/ethnicity		
Black	Reference	
White (non-Hispanic)	2.01 (1.17 to 3.46)	2.64 (1.39 to 5.02)
Hispanic	2.31 (0.86 to 6.20)	3.24 (0.97 to 10.8)
Other ^b	0.92 (0.46 to 1.84)	2.71 (1.09 to 6.73)
Prefer not to answer	2.75 (1.14 to 6.63)	3.02 (0.96 to 9.44)
Age, yr		
21–39	Reference	
40–49	1.60 (0.93 to 2.76)	1.00 (0.52 to 1.90)
50–59	1.35 (0.75 to 2.44)	1.35 (0.66 to 2.74)
60 or older	2.82 (1.50 to 5.30)	0.61 (0.29 to 1.32)
Prefer not to answer	0.50 (0.14 to 1.74)	1.10 (0.13 to 9.65)
Transplant and racial disparities knowledge questions		
On average, white patients are on dialysis for a longer time than black patients—incorrect ^c	3.37 (2.23 to 5.10)	2.83 (1.75 to 4.55)
Facility characteristics		
No. of patients		
>95	Reference	—
≤50	1.46 (0.86 to 2.48)	—
51–70	1.13 (0.66 to 1.94)	—
71–95	1.11 (0.63 to 1.95)	—
No. of staff		
≤10	Reference	—
11–15	1.15 (0.69 to 1.91)	—
16–20	1.00 (0.57 to 1.77)	—
>20	0.94 (0.53 to 1.67)	—
Low percentage of black patients at the facility (<23%; versus high)	1.59 (1.02 to 2.47)	1.86 (1.02 to 3.39)
Facility had waitlisting racial disparity in 2014 (black versus white)	1.09 (0.74 to 1.62)	—
Percentage of families below national poverty level (by zip code of facility)		
0–10	Reference	—
10–15	0.98 (0.55 to 1.74)	0.67 (0.34 to 1.32)
15–20	0.57 (0.33 to 0.98)	0.34 (0.17 to 0.67)
≥20	0.73 (0.43 to 1.26)	0.74 (0.37 to 1.50)
Insurance types, %		
Medicaid only	1.00 (0.98 to 1.01)	1.01 (0.99 to 1.03)
Medicare	1.01 (0.99 to 1.02)	—
Employer based	1.00 (0.98 to 1.02)	—
Other insurance	1.01 (0.97 to 1.05)	—
Uninsured	0.99 (0.96 to 1.01)	—
Comorbidities per 1% increase		
Average count of comorbidities	0.88 (0.60 to 1.27)	—
Diabetes, %	1.02 (1.00 to 1.04)	—
Hypertension, %	1.02 (1.00 to 1.04)	—
Congestive heart failure, %	0.99 (0.97 to 1.00)	—
Chronic obstructive pulmonary disease, %	0.99 (0.96 to 1.02)	—
Cancer, %	0.97 (0.93 to 1.02)	—
Profit (versus nonprofit)	1.44 (0.79 to 2.63)	—

Table 2. (Continued)

Characteristics	Crude OR, Unaware versus Aware (95% CI)	Adjusted OR, ^a Unaware versus Aware (95% CI)
US Census regions		
<i>Northeast</i>	Reference	
<i>South</i>	3.12 (1.40 to 6.97)	3.05 (1.04 to 8.94)
<i>Midwest</i>	2.61 (1.08 to 6.33)	1.66 (0.54 to 5.14)
<i>West</i>	3.44 (1.20 to 9.82)	2.44 (0.65 to 9.17)

OR, odds ratio; 95% CI, 95% confidence interval; —, variable was not included in the multivariable analyses.

^aAdjusted for provider sex, role, race, age, kidney transplant racial disparity knowledge, facility number of patients, number of staff, high versus low percentage of black patients, poverty level of facility zip code, percentage of patients on Medicaid, and US Census regions.

^bOther includes those who self-identified as “Asian,” “American Indian or Alaskan Native,” “Native Hawaiian or other Pacific Islander,” and “Multiple Races.”

^cProviders who did not respond “false” to the statement “On average, white patients are on dialysis for a longer time than African-American patients.”

according to prioritized provider roles, 655 responses remained (Figure 1), consisting of 17% medical directors, 50% nurse managers, 17% facility administrators, 13% social workers, and 3% other staff. Most respondents were women (73%), between the ages of 21 and 59 years old (81%), and predominantly non-Hispanic white (61%). The majority of the dialysis facilities had a high percentage of black patients (68%), were for profit (90%), were located in a zip code with $\geq 10\%$ of families living below the national poverty level (72%), and were located in the South (69%). Facilities had mean number of staff of 16 (± 10), mean number of patients of 76 (± 39), mean percentage of black patients of 41 (± 26), mean percentage of patients with Medicaid of 28 (± 13), and mean percentage of patients with Medicare of 39 (± 13) (Table 1). Among the study population, facilities had a mean of 10% (± 4) of patients waitlisted for transplant in 2014.

Lack of Awareness of National Racial Disparity in Waitlisting

Overall, only 19% (127 of 655) of dialysis facility providers were aware of the national racial disparity in transplant waitlisting. When stratified by the provider role, 50% of medical directors, 11% of nurse managers, 12% of facility administrators, 20% of social workers, and 24% of other staff were aware of racial disparities ($P < 0.001$) (Figure 2A).

In analyses adjusted for provider and facility characteristics, we found that non-Hispanic white (versus black; odds ratio, 2.64; 95% CI, 1.39 to 5.02) providers were more likely to be unaware of waitlisting racial disparities (Table 2). Compared with medical directors, nurse managers were 7.33 (95% CI, 3.35 to 16.0) times more likely to be unaware, facility administrators were 6.05 (95% CI, 2.42 to 15.1) times more likely to be unaware, social workers were 3.04 (95% CI, 1.22 to 7.57) times more likely to be unaware, and other staff were 3.08 (95% CI, 0.72 to 13.2) times more likely to be unaware. Those who were less knowledgeable that black patients wait longer on dialysis than white patients before transplant were 2.82 (95% CI, 1.75 to 4.55) times more likely to be unaware of the waitlisting racial disparity.

Lack of Awareness of Racial Differences in Waitlisting in Own Facility

Among 655 facilities, 171 (26%) facilities had a $> 5\%$ black versus white racial difference in waitlisting in 2014. Figure

3 shows the varying magnitude of the racial differences in waitlisting between black and white patients in facilities that had a higher proportion of white patients waitlisted for transplant compared with black patients in 2014. Dialysis providers' awareness of the racial difference in waitlisting within their own facilities was low: among 171 (26%) facilities with $> 5\%$ racial difference in waitlisting in 2014 (percentage of whites waitlisted – percentage of blacks waitlisted), 5% (nine of 171) of providers responded “yes” when asked whether they believed that there were racial differences in transplant waitlisting within their own facilities. When stratified by provider role, 7% of medical directors and 7% of nurse managers were aware (Figure 2B).

Our sensitivity analysis showed that responder versus nonresponder facilities had similar characteristics with respect to percentage of black patients at the facility, percentage of black patients waitlisted in 2014, composition of patients' insurance types (Medicaid, Medicare, and employer based), and proportion of patients with various comorbidities (average count of comorbidities, diabetes, congestive heart failure, chronic obstructive pulmonary disease, and cancer).

Discussion

Despite the increased national focus on racial disparities in health care in the past two decades (20–22), including extensive documentation of racial disparities in transplant (1,7,12,23), the results of our study reveal that, among dialysis facilities with low waitlisting, providers' awareness of racial disparities in transplantation remains poor. Among a national sample of providers from low-waitlisting facilities, $< 20\%$ knew of the existence of national racial differences in transplant waitlisting. Although awareness of this racial disparity was low across all provider roles, awareness was particularly low for providers, such as nurse managers (11%) and social workers (20%), who are likely to have more frequent contact with patients and often more involved in patient education regarding transplant (24). Furthermore, we found that providers' awareness regarding racial differences that exist within their own facilities was considerably lower (5%).

Our findings are consistent with studies in other specialties that have evaluated physicians' awareness of racial

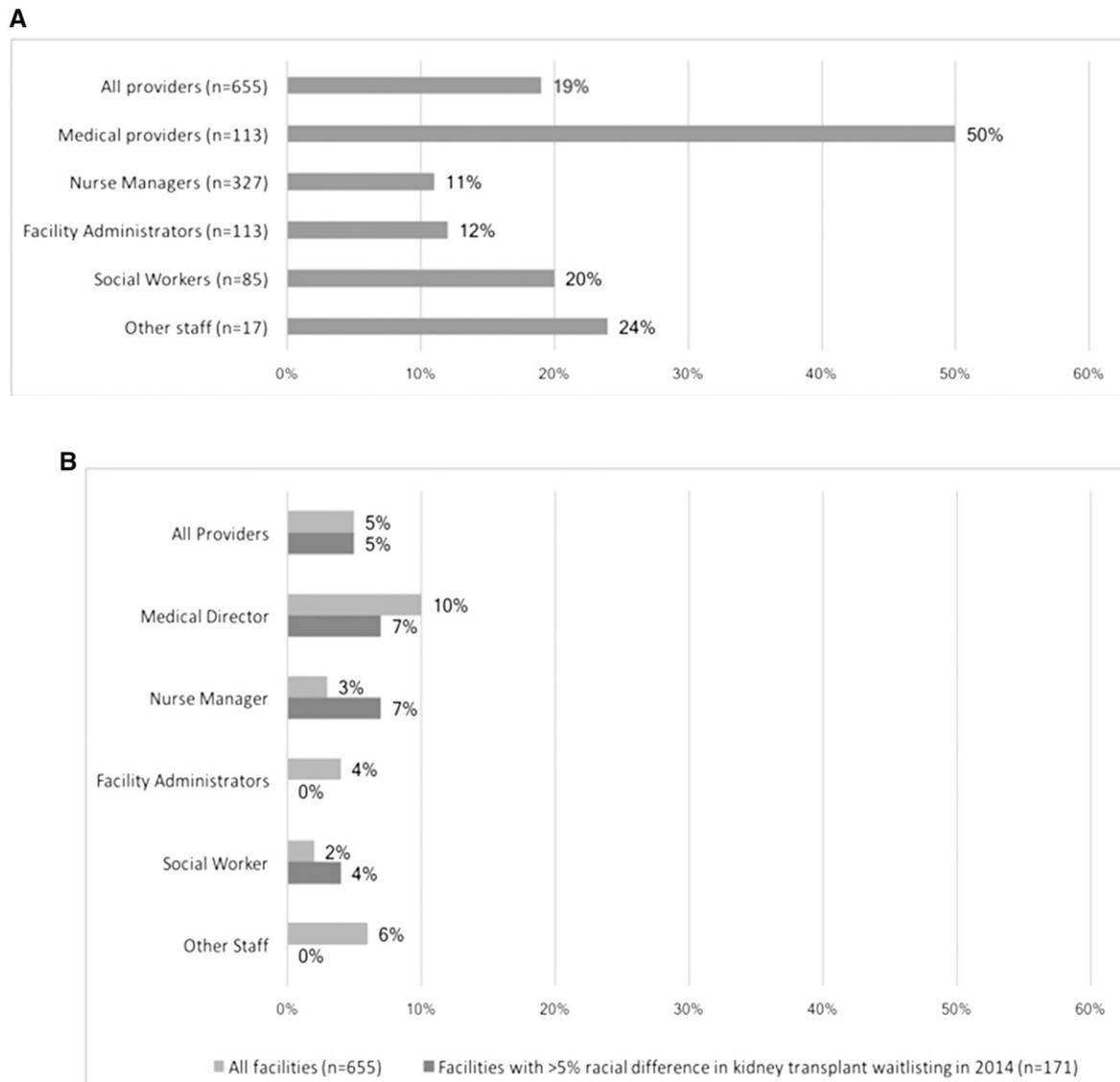


Figure 2. | (A) A total of 19% of all dialysis facility providers responded “yes” to the question “Nationally, do you think that African Americans currently have lower waitlisting rates than white patients on average?”, but this percentage varies among provider roles. (B) A total of 5% of providers from all participating facilities and 5% of providers from the 171 participating facilities with >5% racial differences in transplant waitlisting in 2014 (percentage of whites waitlisted–percentage of blacks waitlisted) responded “yes” to the question “At your facility, do you think there are existing racial differences in waitlisting?”

disparities in their respective fields: a recent study found that 37% of surgeons reported awareness of racial disparities in surgical care in health care overall and that 5% reported disparities within their personal practice (25). Our findings are similar to those of a study of cardiologists conducted >10 years ago that found their awareness of national racial disparities in the United States health care system to be low (34%) and their awareness of racial disparities in the care of their patients to be lower (12%) (26), which suggests that we have not made sufficient progress in increasing provider awareness, despite overwhelming evidence documenting disparities in the United States (27). These studies, along with this study, show a similar trend in the decreased likelihood of recognition regarding the existence of racial disparities when the

context becomes closer to personal practices. Furthermore, as argued in prior literature (25,26,28,29), this suggests providers’ failure to recognize the role that they as providers can have in racial disparities. In fact, one study surveying nephrologists found that most of their perceived reasons for racial differences in transplantation were patient-level factors, such as patient preferences (66%) (17), rather than structural, cultural, or provider-level barriers.

This low awareness among dialysis providers regarding racial disparities in transplant has important implications given the influence that health care providers at dialysis facilities have in patients’ decision-making process (30–32) and reducing barriers that contribute to racial disparities in kidney transplant (33). A prior study investigating modifiable factors in reducing racial disparities in kidney

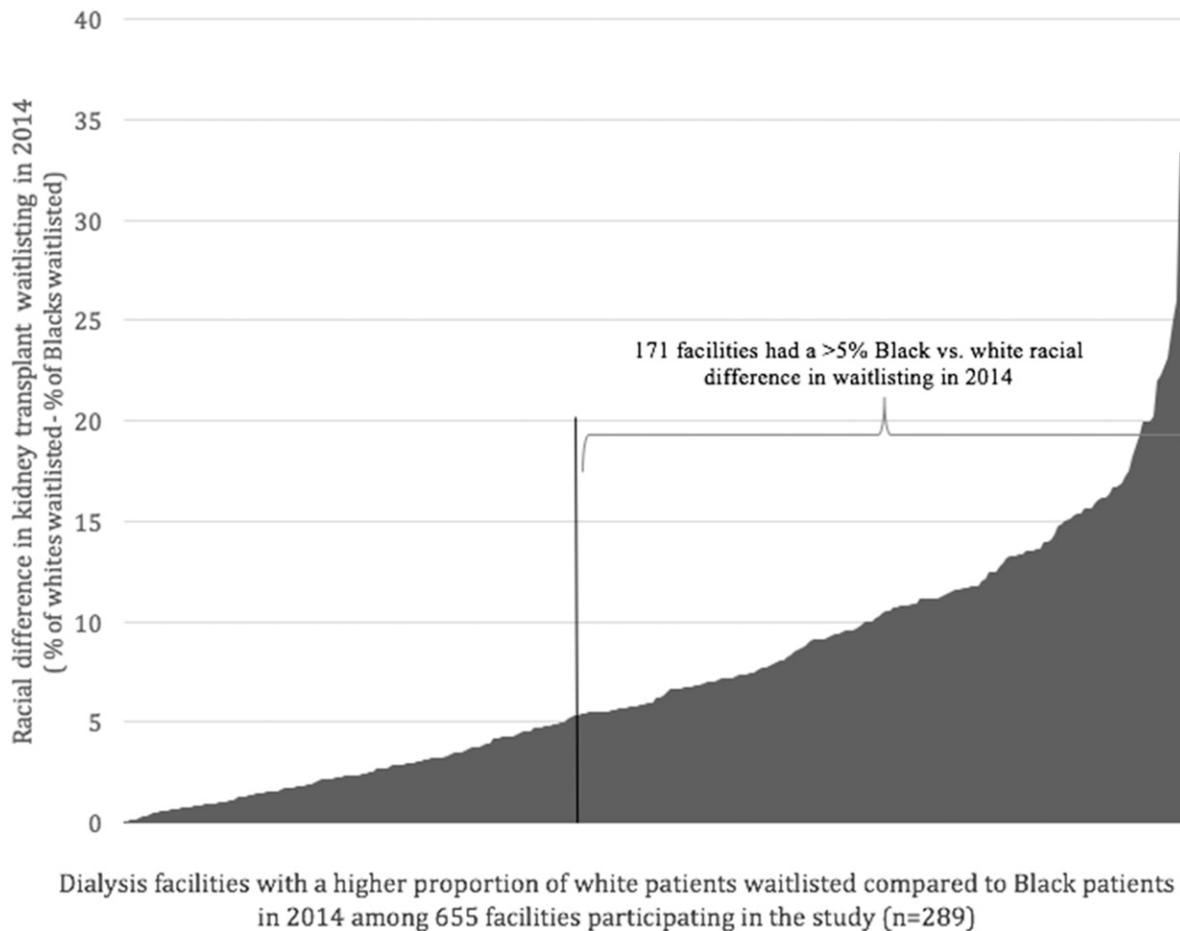


Figure 3. | Variation in the magnitude of racial differences in kidney transplant waitlisting in the 2014 US Renal Data System (percentage of whites waitlisted – percentage of blacks waitlisted) shows that among the 655 participating facilities, 289 had a higher proportion of white patients waitlisted compared with black patients waitlisted. In 171 of these facilities, the black versus white difference in waitlisting was >5% (vertical line in the graph), and these facilities were considered to have a racial difference in the study.

transplant found that blacks (versus whites) were less likely to have received adequate transplant education (39% versus 54%, respectively), had lower transplant knowledge (21% versus 50%, respectively), and were less willing to allow a living donor to volunteer (21% versus 40%, respectively), which were all important predictors of transplant evaluation completion that can be intervened on early with education and cultural sensitivity training, particularly in settings like dialysis centers (34). If, however, providers are unaware of these racial disparities, they not only may be less compelled to implement interventions to address disparities but also, can unconsciously exacerbate the problem by failing to address the mechanisms through which they themselves can contribute to racial disparities in access to transplantation. This includes provider biases (often implicit), such as perceptions of patients' preferences regarding transplantation on the basis of race (17); beliefs and stereotypes about health behaviors, such as nonadherence (35); and culturally incompetent and incongruent care (36).

There are limitations to this study. First, we had a moderate survey response rate of 42%, which was expected (37,38). However, the characteristics of responder versus nonresponder facilities were similar with regard to

composition of race, insurance types, comorbidities, and proportion of patients waitlisted. Second, this study was limited to providers from dialysis facilities with low waitlisting (lowest national tertile). As a result, our findings cannot be generalized to providers among facilities with higher levels of waitlisting. In addition, our study cannot examine the association between low awareness of racial disparity and waitlisting disparity. However, our study population represents low-waitlisting facilities from all 18 ESRD networks across the nation, and our study findings may offer important insight into this population. Third, there is the possibility of social desirability bias (in which respondents answer in a manner that will be viewed favorably by others) given that racial differences, particularly within one's practice, may be a sensitive topic. Fourth, the sample size was not large enough to assess whether provider responses varied among the heterogeneous groups represented in the "other" race/ethnicity category.

To our knowledge, this is the first study to examine awareness of racial disparities in kidney transplant among United States health care providers at dialysis facilities and the first to examine awareness among providers of various roles. There is an overall low awareness of racial disparities

in transplant waitlisting among dialysis providers who work in low-waitlisting facilities, suggesting the need for continued emphasis on increasing provider awareness regarding racial disparities among low-waitlisting facilities. Results suggest that multilevel interventions should target not only physicians but all provider roles. Understanding providers' knowledge of disparities may help identify areas of intervention for potential training and result in campaigns to increase provider awareness of racial disparities in kidney transplant, which may ultimately improve equity in access to transplantation. Increasing awareness of racial disparities in kidney transplant among providers nationally and within their own practices continues to be an important and necessary first step in achieving equity. Future research should be done to determine whether increasing awareness of racial disparities in transplant will improve the administration and outcomes of transplant education provided in dialysis centers.

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Disclosures

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